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By Karl-Johan Hedqvist [1]

Genus *Epistenia* Westwood

Species of the genus *Epistenia* Westwood are comparatively large, stout chalcid flies characterized as follows: Coarsely punctured. Head large, broader than thorax, with deep antennal grooves that converge and meet in front of median ocellus. Eyes large, hairy. Antennae inserted near base of clypeus, with 11 segments (formula, 11171), the type-species, *E. coeruleata* Westwood, has first fourth funicle segments longer than wide. Clava and seventh funicle segment with micropilosity (in *E. coeruleata* also apex of sixth). Clypeus slightly sinuated. Labrum free. Each mandible with three teeth. Ocelli in isosceles triangle. Pronotum produced anteriorly into a short neck, the neck with a median carina. Mesonotum with notaulices complete. Scutellum large, convex, and prolonged slightly over metathorax and propodeum. Apex of scutellum nipple-like. Prepectus large, punctate. Propodeum short with a median carina and an incomplete plica. Spiracles large. Gaster longer than head plus thorax, sessile, first segment smooth, second segment not visible dorsally. Apex of gaster more or less tubelike, elongated, with a delicate median carina. Legs stout, all femora swollen, anterior one stoutest, with a tooth distally on the ventral side. Hind tibia with two spurs (in one species, *E. odyneri* Ashmead, also with long bristles on the hind tibia.) Fore-

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wing without any speculum, costal cell with many hairs along margin. Postmarginal vein longer than marginal vein. Stigmal vein short, about one-third length of marginal vein.

In the Nearctic region there are five known species. I describe two new species in the present paper.

The species of *Epistenia* are primary parasites of solitary nesting aculeate Hymenoptera. Rau (1922) reared *E. osmiae* Ashmead (now considered a synonym of *E. coeruleata*) from an elder twig that had been tunneled by *Ceratina* species or *Ectemnius* (*Hypocrabro*) species. Parker and Bohart (1966) reared *E. coeruleata* from *Isodontia elegans* (Smith) and *Trypargilum tridentatum tridentatum* (Packard) nesting in borings in *Sambucus* stems. *Epistenia regalis* Cockerell (1934) (a probable synonym of *E. coeruleata*) was described originally from a specimen reared from the nest of an odynerid wasp. The original hosts of *E. osmiae* and *E. odyneri* Ashmead are obvious from their names; the first was described from a specimen reared from an *Osmia* species in a catalpa twig, and the second emerged from burrowings of *Odynerus* (now *Leptochilus*) *rufobasilaris* Ashmead in twigs of *Nama*. There are in the USNM collection specimens of *E. coeruleata* that were reared by J. C. Bridwell from *Trypargilum collinum rubrocinctum* (Packard) and by K. V. Krombein from *Leptochilus republicanus zendaloides* (Robertson). The latter rearing was from a sumac stem boring. [3]

Key to Nearctic Species of *Epistenia*

1. Hind tibiae with long bristles, 2–3 times breadth of tibia . . **odyneri** Ashmead
   Hind tibiae with short spines, shorter than breadth of tibia 2
2. Malar space as long as half breadth of an eye. Distance between upper edges of antennal scrobes twice diameter of an ocellus . . . **burksi**, new species
   Malar space as long as or nearly as long as breadth of an eye. Distance between upper edge of antennal scrobe and front edge of median ocellus only equal to or less than diameter of ocellus 3
3. Wings distinctly smoky . . . . . **polita** (Say)
   Wings hyaline, without darker clouds 4
4. Last tergite of gaster short, about one and one-half times as long as its basal breadth . . . . . **media**, new species
   Last tergite of gaster long, more than twice as long as its basal breadth . . . 5
5. Tegulae black . . . . . **regalis** Cockerell
   Tegulae yellowish brown . . . . . **coeruleata** Westwood

Epistenia odyneri Ashmead

Epistenia odyneri Ashmead.—Davidson, 1896, p. 336.

This species differs from the other species from the Nearctic region in having long bristles on the hind tibia (fig. 5*d*). Originally described from California. The author has seen a male specimen from Arizona (Grand Canyon, Bright Angel Trail, May 15, 1952, E. B. Haydon, Jr.).

[3] Paragraph added by B. D. Burks.

Epistenia burksi, new species

FEMALE.—Length 4.0–4.5 mm.

Bluish black with blue and green spots on head, prothorax, and

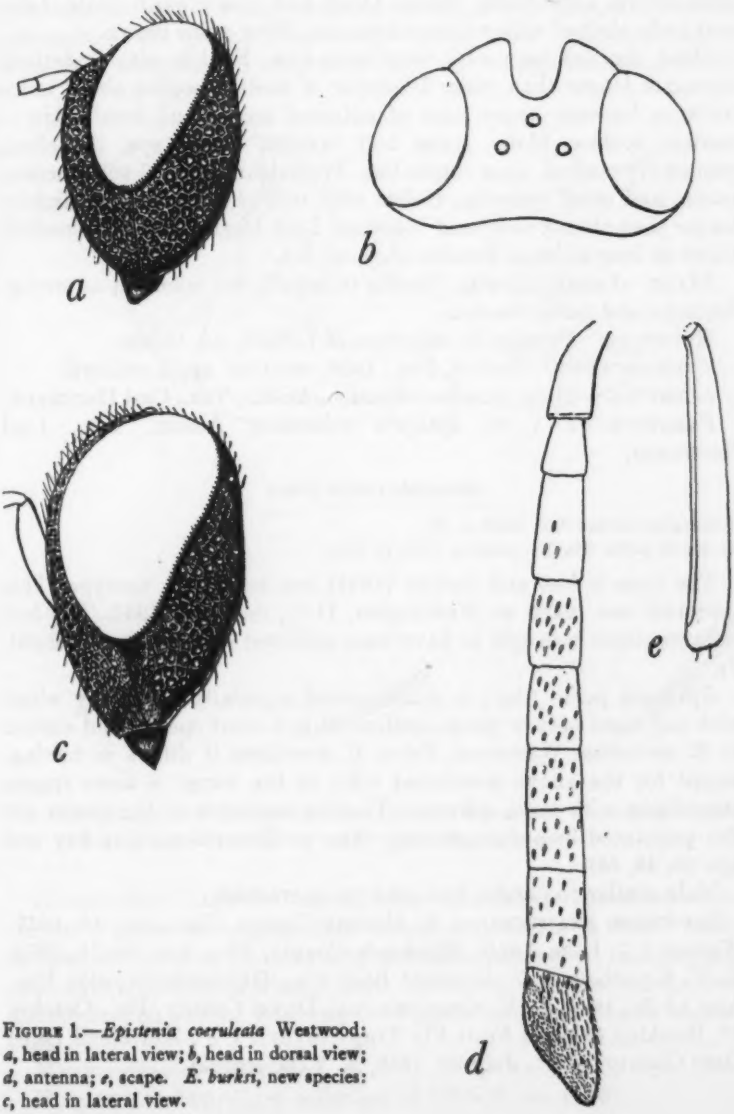

FIGURE 1.—*Epistenia corruleata* Westwood: *a*, head in lateral view; *b*, head in dorsal view; *d*, antenna; *e*, scape. *E. burksi*, new species: *c*, head in lateral view.

mesothorax. Wide band of green and purple over anterior part of scapulae and median part of mesonotum. Lateral part of metathorax and propodeum green and blue. First tergite of gaster golden green. Antenna with bluish-green reflection on scape and pedicel, flagellum dark brown. Legs honey yellow. Ocelli and eyes grayish white. Legs and body clothed with white pubescence. Wing veins brown.

Head (fig. 1*c*) large with very large eyes. Funicle with first–third segments longer than wide. Diameter of median ocellus about twice distance between upper edge of antennal scrobe and front edge of median ocellus. Malar space half breadth of an eye. Scutellum posteriorly conical, apex nipple-like. Propodeum (fig. 3*c*) with median carina and small spiracles. Callus with tuft of hairs. Gaster slightly longer than thorax and head together. Last tergite one and one-half times as long as basal breadth (figs. 4*c*, 5*c*).

MALE.—Length 2.2 mm. Similar to female, but color not as strong. Antenna and gaster brown.

HOLOTYPE.—Female, in collection of USNM, no. 69556.

TYPE-LOCALITY.—Linton, Ind., 1956, summer, apple orchard.

ALLOTYPE.—Male, in same collection, Austin, Tex., Carl Hartmann.

PARATYPE.—1 ♀ in author's collection, Austin, Tex., Carl Hartmann.

Epistenia polita (Say)

Spalangius politus Say, 1828, p. 79
Epistenia polita (Say).—Gahan, 1951, p. 174.

The type is lost and Gahan (1951) has selected a neotype. This specimen was taken at Washington, D.C., Sept. 15, 1944. The lost type specimen was said to have been collected on Senipuxent Island, Va.

Epistenia polita (Say) is characterized especially by smoky wings with the basal part of wings hyaline. It is a stout species and similar to *E. coeruleata* Westwood. From *E. coeruleata* it differs in having, except for the above mentioned color of the wings, a more rugose propodeum with large spiracles. The last segments of the gaster are also punctated in a stronger way than in *E. coeruleata* (see key and figs. 3*b*, 4*b*, 5*b*).

Male similar to female, but color more greenish.

SPECIMENS EXAMINED.—1 ♀, Alachua County, Fla., Apr. 16, 1947, Warner. 1 ♀, Lake Annie, Highlands County, Fla., Apr. 14–24, 1963, K. V. Krombein. 1 ♀, Archbold Biol. Sta., Highlands County, Fla., Apr. 14–24, 1963, K. V. Krombein. 1 ♀, Duval County, Fla., October 10, Brinkley (Florida Fruit Fly Trap Survey). 1 ♂, Kill Devil Hills, Dare County, N. C., July 30, 1958, K. V. Krombein.

***Epistenia media*, new species**

FEMALE.—Dark blue with tint of violet (mixed with green) on face, collar, scapulae, scutellum, propodeum, and coxae. Occiput with tint of green, also anterior part of mesoscutum and below antennal sockets glistening with green. Legs except coxae dark yellowish brown. Funicle of antenna and wing veins dark brown. Apex of gaster black.

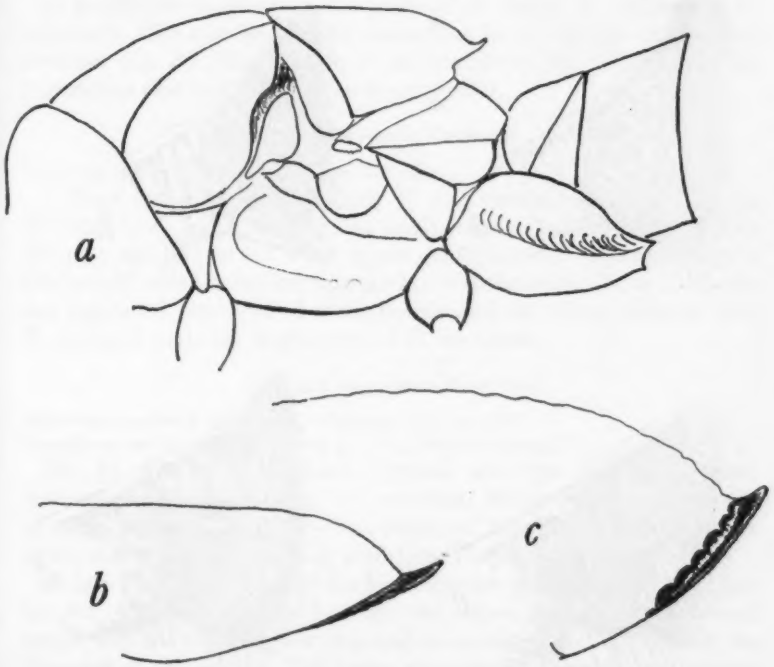

FIGURE 2.—*Epistenia corruleata* Westwood: *a*, thorax in lateral view; *b*, scutellum in lateral view. *E. media*, new species: *c*, scutellum in lateral view.

Gaster short, only as long as head and thorax combined. First tergite of gaster as long as third (second not visible in dorsal view). Median ocellus with clava as long as funicle joints 5–7; funicle joints with few rhinariae. Distance from ocellus to antennal scrobe half diameter of an ocellus. Last tergite of gaster nearly as long as wide at base.

MALE.—Similar to female.

HOLOTYPE.—Female, in collection of USNM, no. 69557.

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TYPE-LOCALITY.—Verdi, Washoe County, Nev., F. D. Parker.

ALLOTYPE.—Male, in same collection as holotype. Verdi, Washoe County, Nev., F. D. Parker.

PARATYPES.—1 ♀, Verdi, Washoe County, Nev., F. D. Parker. 1 ♀, 1 ♂, Verdi, Washoe County, Nev., Dec. 16, 1960, reared from elderberry stems, F. D. Parker. 1 ♀, same data, but Jan. 28, 1961.

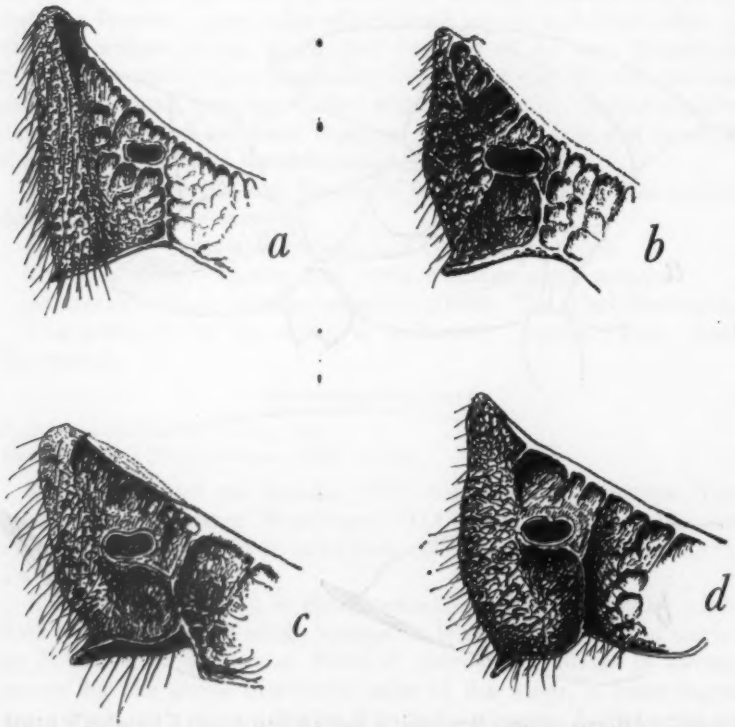

FIGURE 3.—Left part of propodeum, dorsal view: *a*, *Epistenia coeruleata* Westwood; *b*, *E. polita* (Say); *c*, *E. burksi*, new species; *d*, *E. media*, new species.

1 ♀, Putah Canyon, Yolo County, Calif., Nov. 20, 1960, reared from elderberry stems, F. D. Parker. 2 ♂, Putah Canyon, Yolo County, Calif., F. D. Parker, 1 ♂, Texas, Belfrage. 1 ♂, 1 ♀, Rochester, N. Y., K. W. C. Cooper. 1 ♀, Verdi, Washoe County, Nev., F. D. Parker. 1 ♀, Verdi, Washoe County, Nev., Jan. 28, 1961, reared from elderberry stems, F. D. Parker. 1 ♂, Putah Canyon, Yolo County, Calif.,

F. D. Parker. 1 ♂, Santa Cruz Mountains, Calif., 4 ♀, 5 ♂ paratypes in USNM collection.

REMARKS.—*Epistenia media* is very similar to *E. coeruleata* but differs in having the last tergite of the gaster shorter (see key and fig. 4*d*) and the propodeum is different. Funicle segments in *E. media* have fewer rhinariae than in *E. coeruleata*. Scutellum in lateral view (fig. 2*c*) has a different profile in *E. media* than in *E. coeruleata* or in *E. polita*.

It is difficult to separate the males of *E. media*, *E. polita*, and *E. coeruleata*. One can find small differences in the shape of the propodeum (fig. 3*d*), the profile of the scutellum (fig. 2*c*) and in the punctation (see key and species descriptions).

Epistenia regalis Cockerell

Epistenia regalis Cockerell, 1934, pp. 228–229.

I have not seen any specimen of this species. According to the description, *E. regalis* has tegulae small and black. This is a character one may not find in the other species of *Epistenia*. *Epistenia regalis* has been included in the key in regard to this character. Dr. B. D. Burks has examined the type of this species; and his notes indicate that *E. regalis* is probably a synonym of *E. coeruleata*.

Epistenia coeruleata Westwood

Epistenia coeruleata Westwood.—Griffith, 1832, p. 432.
Dasyglenes osmiae Ashmead, 1888, p. 174. [New synonymy.]

Dr. M. W. de V. Graham, Oxford, who has kindly compared specimens with the type of *E. coeruleata* Westwood at the British Museum (Natural History), has furnished the information that has aided me in understanding *E. coeruleata* Westwood.

It is a stout species with the last segment of the gaster long (figs. 4*a*, 5*a*), and the distance between the upper edge of the antennal scrobe and the front edge of the median ocellus is only about half the diameter of the ocellus. This latter character is variable, and among all the specimens I have studied there are few with the distance between the upper edge of the antennal scrobe and the front edge of the median ocellus nearly as long as the diameter of the ocellus. The head (figs. 1*a*, *b*) is nearly globular and the eye is elongate. For the differences between *E. coeruleata*, *E. polita*, and *E. media*, see the key and the discussion under *E. media* (see also figs. 1*d*, *e*, 2*a*, *b*, 3*a*).

I have failed to find a real character that separates *E. osmiae* (Ashmead) from *E. coeruleata*, and for that reason I have made the former a synonym of the latter.

SPECIMENS EXAMINED.—1 ♀, Kill Devil Hills, N.C., Apr. 22, 1954, Karl V. Krombein. 2 ♀, Davis Mountains, Tex., July 2, 1940, D. J.

and J. N. Knull. 1 ♀, Verdi, Washoe County, Nev., F. D. Parker. 15 ♀, Verdi, Washoe County, Nev., F. D. Parker. 1 ♀, Verdi, Washoe County, Nev., reared from elderberry stems, Jan. 28, 1961, F. D. Parker. 2 ♀, Verdi, Washoe County, Nev., reared from elderberry stems, Jan. 25, 27, 1961, F. D. Parker. 1 ♀, Verdi, Washoe County, Nev., reared from elderberry stems, Dec. 16, 1960, F. D. Parker. 6 ♂, Verdi, Washoe County, Nev., reared from elderberry stems, Dec. 16, 1960, F. D. Parker. 1 ♀, Brownsville, Tex., May 22, 1935, J. N. Knull.

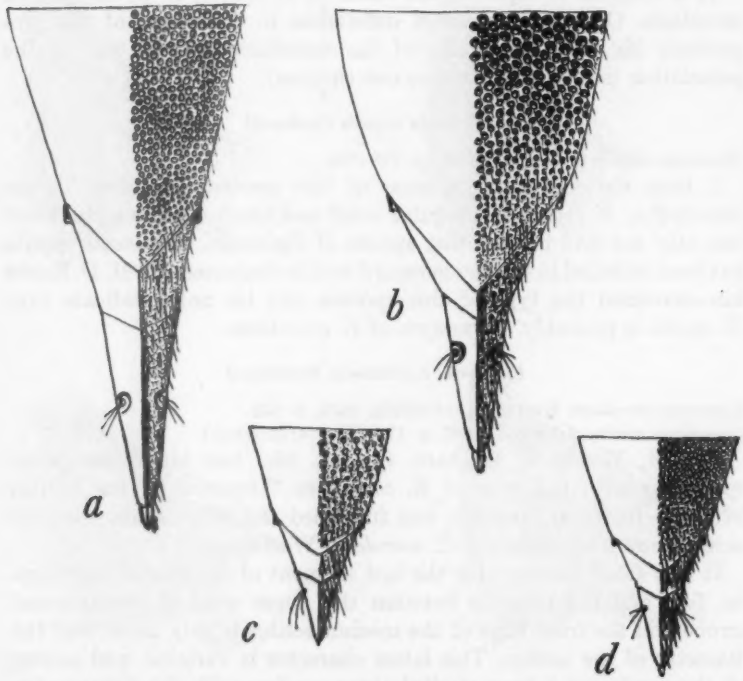

FIGURE 4.—Posterior part of gaster, dorsal view: *a*, *Epistenia corruleata* Westwood; *b*, *E. polita* (Say); *c*, *E. burksi*, new species; *d*, *E. media*, new species.

1 ♀, Atlanta, Ga., July 22, 1942, P. W. Fattig. 1 ♀, Santa Cruz Mountains, Calif. 1 ♀, St. Louis, Mo., P. Rau. 1 ♀, Rochester, N.Y., K. W. Cooper. 1 ♂, S. Hampton, Mo., Mar. 30, 1922, P. Rau.

Genus *Macromesus* Walker

From Dr. B. D. Burks, U.S. National Museum, Washington, I have received specimens of a new species of *Macromesus* Walker for description.

Macromesus javensis, new species

FEMALE.—Length 2.0–2.5 mm. Head dark blue with tint of violet. Face below toruli testaceous with metallic tint of blue. Scape, pedicel, and first funicle segment yellowish brown. Thorax yellowish brown, along notaulices dark brown. Legs stramineous. Gaster blue with tint of violet. Wing veins pale yellowish brown.

Head (fig. 6*b*) semiglobular, eyes large. Antennae inserted just above level of ventral margin of eyes. Scape short, enlarged, not reaching median ocellus. All funicle segments elongate, much longer than wide. Punctation of head consists of fine reticulation. Mesonotum with well-defined notaulices. Pro- and mesonotum, scutellum, and metanotum dorsally with equal reticulation. Propodeum medially shorter than length of metanotum, with six longitudinal carinae. Both head and thorax with few scattered black setae. Gaster longer than head plus thorax and with a stylet-shaped posterior part. Forewing (fig. 6*a*) with marginal vein longer than postmarginal vein.

MALE.—Length 1.9–2.2 mm. Similar to female, but gaster with more yellowish brown at anterior part of gaster. Propodeum with plicae; antennae with more setae on funicle segments.

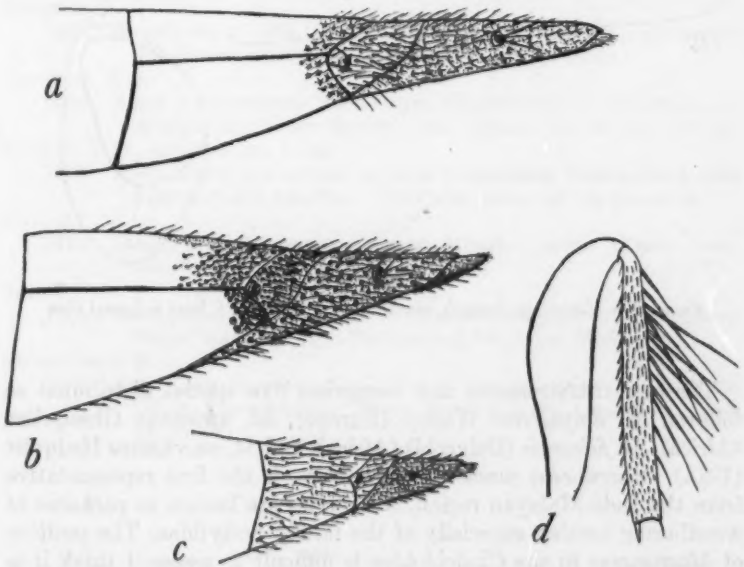

FIGURE 5.—Posterior part of gaster, lateral view: *a*, *Epistenia corruleata* Westwood; *b*, *E. polita* (Say); *c*, *E. burksi*, new species. Hind femur and tibia: *d*, *E. odynerri* Ashmead.

HOLOTYPE.—Female, in collection of USNM, no. 69558, Bogor, Java, August 1964, *ex* scolytid-infested wood, N. L. H. Krauss.

ALLOTYPE.—Male, same data.

PARATYPES.—Six specimens (3 ♀ and 3 ♂) in collections of USNM and author. All paratypes from same locality as holotype.

REMARKS.—*Macromesus javensis* is related to *M. amphiretus* Walker but differs by having a shorter propodeum and different wing veins; the color of the two species also is quite different.

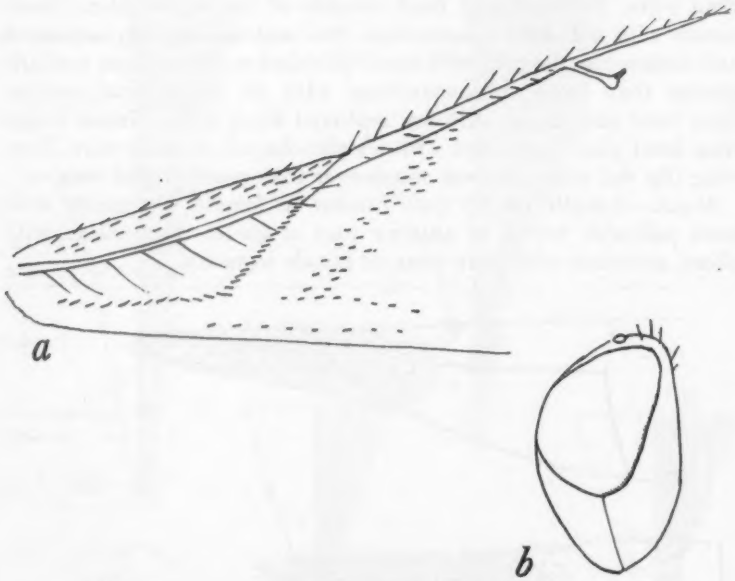

FIGURE 6.—*Macromesus javensis*, new species: *a*, forewing; *b*, head in lateral view.

The genus *Macromesus* now comprises five species distributed as follows: *M. amphiretus* Walker (Europe), *M. africanus* Ghesquière (Africa), *M. filicornis* (Delucchi) (Africa), and *M. americanus* Hedqvist (USA). *Macromesus javensis*, new species, is the first representative from the Indo-Malayan region. All species are known as parasites of woodboring beetles, especially of the family Scolytidae. The position of *Macromesus* in the Chalcidoidea is difficult to assess. I think it is best to place it provisionally in the Pteromalidae tribe Macromesini (see Graham, 1959; Ghesquière, 1963; and Szczepanski, 1959) and await the discovery of more species.

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